DEPMEDS LABORATORY PROCEDURES
DEPARTMENT OF CLINICAL SUPPORT SERVICES
U.S. ARMY MEDICAL DEPARTMENT CENTER AND SCHOOL
FORT SAM HOUSTON, TEXAS 78234-6137

MCCS-HCL STANDING OPERATING PROCEDURE 01 November 01

ACTIVATED PARTIAL THROMBOPLASTIN TIME BY MLA ELECTRA 750

1. PRINCIPLE:

   a. The MLA Electra 750 utilizes a photometric detection technique to determine the clotting endpoint. When cephalin with activator and calcium chloride are added to anticoagulated plasma, a fibrin clot will form. The time it takes for the formation of this clot is the Activated Partial Thromboplastin Time (APTT).

   b. The APTT is a screening procedure used primarily to evaluate abnormalities in the enzymes and cofactors of the intrinsic coagulation pathway necessary for prothrombin activation.

2. SPECIMEN:

   a. Collect one part 3.8% (0.109 M) sodium citrate to 9 parts of whole blood in a plastic syringe or siliconized glass tube.

   b. Centrifuge within one hour after collection for approximately 15 minutes at 3300 RPM.

   c. Refrigerate at 2-8^{o}C in a plastic or siliconized tube with stopper.

   d. Test plasma within 4 hours of draw. Specimens may be kept at room temperature if tested within 2 hours.

   e. For extended storage, rapidly freeze plasma at -20^{o}C.

3. REAGENTS AND EQUIPMENT:

NOTE: Most reagents and controls are made of human or animal blood and tissue. Use of Personal Equipment (PPE) to prevent possible contamination or infection is required.

a. Actin activated cephaloplastin reagent.

(1) Store at 2-8^{o}C.

(2) Reconstitute with purified water per manufacturer's instructions.

(3) After reconstitution store at 2-8^{o}C; use within 24 hours.

(4) Record expiration date and time on label.

b. Calcium chloride reagent 0.02 M.

c. Controls.

(1) Store at 2-8^{o}C.

(2) Reconstitute Normal and Abnormal with purified water per manufacturer's instructions

(3) After reconstitution store at 2-8^{o}C, use within 24 hours

(4) Record expiration date and time on label.

d. MLA Electra 750: Check Temperature and timer per MLA Initial Set-up S

e. 0.2 mL pipet.

f. 0.1 mL pipet.

g. Pipet tips.

h. MLA cuvettes.

i. Purified water.

4. QUALITY CONTROL:

a. Check instrument temperature, 37.2^{o}C $\pm$ 0.5^{o}C.

(1) Record on Temperature Chart at beginning of shift.

(2) If temperature exceeds 37.7°C or falls below 36.7°C, notify supervisor and Medical Maintenance section.

b. Normal and abnormal controls.

(1) Run at the start of each shift, at the beginning of each specimen run and when new reagent is used.

(2) Record all results on APTT QC chart.

(3) If any result exceeds ± 2 standard deviations, rerun control.

(a) If within range, record and continue run.

(b) If it exceeds a second time, record results and notify supervisor.

5. PROCEDURE:

a. Turn on MLA 750. Allow a 5-minute warm-up period, or wait until AT TEMP indicator lights, whichever is longer.

b. Check that LAMP LEVEL switch is at "B" (middle position).

c. Prewarm Calcium Chloride in calcium reservoir for at least 5 minutes or until at operating temperature, 37°C.

d. Set switch to APTT.

e. Place two cuvettes in the heating block for each specimen required and add 0.1 mL of Actin to each.

f. Add 0.1 mL of control or patient's plasma to each tube and mix.

g. Set time for 5 minutes.

h. After 5 minutes, place first cuvette to be tested in test station.

i. Use 0.1 mL test pipet (blue top) to dispense 0.1 mL Calcium Chloride into cuvette holding Actin and test plasma.

j. Record test result.

k. Repeat step "I" on duplicate specimen.

6. RESULTS:

a. Agreement of results.

(1) Within 2 seconds.

(2) If results do not agree, run a second set of two cuvettes.

b. Report the averaged APTT result to the nearest second along with the normal range.

c. Range.

(1) Normal: 24-35 seconds (Should be established by each laboratory.)

(2) Critical: Greater than 68 seconds.

d. Abnormal APTT results on patients who are not on anticoagulant therapy should be repeated.

e. If results are critical, notify physician immediately and document notification.

7. PROCEDURAL NOTES:

a. Patient tube must be accurately filled; over or under filling can cause erroneous results.

b. Ensure all reagents are well mixed and have stood for 15 minutes and are mixed again before testing.

c. Allow 20 minutes for 10 mL of refrigerated reagent to come to analyzer temperature.

d. Actin activated cephaloplastin reagent should not be held at 37^{o}C longer than 60 minutes.

e. Use clean pipet tip on instrument pipette for each test to prevent carry over contamination.

f. Insure that reagent is directed into the bottom of the tube and not run down the side of the cuvette. This provides proper mixing of the specimen and reagent.

g. Patient plasma should not be incubated longer than 5 minutes.

8. LIMITATIONS:

a. Operating temperature range: 10 to 32^{o}C.

b. Storage temperature range: -40 to 55^{o}C.

c. Operating humidity range: 0-60%, noncondensing.

d. Storage humidity range: 0-90%, noncondensing.

9. REFERENCES:

a. Brown, B.A., Hematology: Principles and Procedures. 6th ed., Philadelphia: Lea and Febiger, 1993.

b. MLA Electra 750 Instruction Manual, Medical Laboratory Automation, Inc., 270 Marble Ave., Pleasantville, NY 10570-2982, 1990.